Studies on Ichthyofaunal Diversity of Gour River, Jabalpur, Madhya Pradesh, Central India

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Abstract: The fishes are one of the most important vertebrate, provided rich protein sources for human and several animals and important elements in the economy of many countries. Fish diversity of river essentially represents the fish faunal diversity and their abundance. Rivers conserve a rich variety of fish species which supports the commercial fisheries. The country is rich in diversity of such important group of animals. Keeping in view, the diversity of fish fauna of the Gour River in Jabalpur District, Madhya Pradesh, Central India has been studied from the period April 2010 to March 2011. The aim of the study was to explore the fish fauna of Gour River. In the course of investigation, three sampling spots were selected viz. Saliwara Village, Near Gour Bridge and Near TFRI Campus, Jabalpur. The total 33 fish species were recorded under 5 orders and 10 families. 16 species of Cypriniformes, 7 species of Siluriformes, 3 species of Synbranchiformes, 6 species of Perciformes and 1 species of Beloniformes have been recorded. The Cyprinidae family is dominant followed by Channidae and Bagridae. Recently, the Tor tor fish species commonly called ‘Mahasheer’ has been declared state Fish of Madhya Pradesh. The over fishing and pollution are the major threat for fish diversity of the Gour River.

Key words: Fish Diversity %Fresh Water Fishes %Gour River %Jabalpur %Madhya Pradesh

INTRODUCTION

Fish constitutes half of the total number of vertebrates in the world. They live in almost all conceivable aquatic habitats; 21,723 living species of fish have been recorded out of 39,900 species of vertebrates out of these 8,411 are freshwater species and 11,650 are marine. India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of freshwater mega biodiversity. India there are 2,500 species of fishes of which 930 live in freshwater and 1,570 are marine [1].

The Gour River is one of the most important river of Jabalpur and Mandla Districts of Madhya Pradesh. The river flows from Niwas Village (origin point) of Mandla District and joins Narmada River at Jabalpur. The river is the lifeline of the people resides in nearby villages mostly for various domestic activities. The peoples are catching, selling and feeding the fishes from the Gour River. The fish diversity of the river is still unexplored and not documented. The fresh water fishes are well studied and documented across the country [2-4].

Several renowned workers studied the fresh water fishes of rivers, ponds, lakes, dams and reservoir of the country. The fish fauna of Madhya Pradesh and Jabalpur was studied Hora [5, 6], Hora and Nair [7], Swarup [8], Dubey and Mehra [9], Soni [10, 11], Malviya [12], Dubey and Verma [13], Mathur and Mishra [14], Tilak and Sinha [15], Karmakar and Datta [16], Saxena [17], Desai [18], Desai et al [19], Sen [20, 21], Sharma [22-24], Dwivedi et al. [25]. Shukla et al. [26], Chandra et al. [27], Thilak [28, 29], Mahor [30] and Solanki et al. [31]. However, data on the fish fauna of Madhya Pradesh have limitations as most of the rivers have not been surveyed extensively and checklists for individual rivers are not available. In the present study, we document the fish fauna of Gour River, Jabalpur District, Madhya Pradesh.

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Table 1: List of fish species from Gour River together with abundance and status

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Order Family</th>
<th>Scientific Name</th>
<th>Threat Status</th>
<th>Relative Abundance</th>
<th>Near Gour Bridge</th>
<th>Near TFRI campus</th>
<th>Near Saliwara Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Order: Cypriniformes</td>
<td><em>Catla catla</em> (Hamilton)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>I. Family: Cyprinidae</td>
<td><em>Cirinus mrigala</em> (Hamilton)</td>
<td>LRnt</td>
<td>C</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td><em>Cirrhinus rehu</em> (Hamilton)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><em>Ctenopharyngodon idellus</em> (Valenciennes)</td>
<td>EX</td>
<td>C</td>
<td>+</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><em>Cyprinus carpio</em> (Linn.)</td>
<td>EX</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><em>Labeo batu</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><em>Labeo calbasu</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><em>Labeo gonias</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><em>Labeo rohita</em> (Hamilton)</td>
<td>LRnt</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><em>Osteobrama cotto</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><em>Puntius chola</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><em>Puntius sarana</em> (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><em>Puntius sophore</em> (Hamilton)</td>
<td>LRnt</td>
<td>C</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><em>Puntius ticto</em> (Hamilton)</td>
<td>LRnt</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td><em>Rasbora daniconius</em> (Hamilton)</td>
<td>NE</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Tor tor</em> (Hamilton)*</td>
<td>EN</td>
<td>R</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>2. Order: Siluriformes</td>
<td>Mystus vitatus (Bloch)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>II. Family: Bagridae</td>
<td>Mystus tengara (Hamilton- Buchanon)</td>
<td>NE</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>19</td>
<td><em>Mystus bleekeri</em> (Day)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>III. Family: Siluridae</td>
<td><em>Ompok bimaculatus</em> (Bloch)</td>
<td>EN</td>
<td>R</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>21</td>
<td><em>Wallago attu</em> (Bloch and Schneider)</td>
<td>LRnt</td>
<td>R</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>IV. Family : Claridae</td>
<td><em>Clarias batractus</em> (Linnaeus)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>23</td>
<td><em>Heteropneustes fossilis</em> (Bloch)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td><em>Mastacembelus armatus</em> (Lacepede)</td>
<td>NE</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td><em>Macrognathus pancalus</em> (Hamilton)</td>
<td>LRnt</td>
<td>R</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>VI. Family : Synbranchidae</td>
<td>Monopterus cuchia (Hamilton)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>VII. Family : Channidae</td>
<td><em>Channa marulius</em> (Hamilton)</td>
<td>LRnt</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>28</td>
<td>4. Order : Perciformes</td>
<td><em>Channa punctatus</em> (Bloch)</td>
<td>LRnt</td>
<td>M</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>29</td>
<td>VII. Family : Channidae</td>
<td><em>Channa striatus</em> (Bloch)</td>
<td>LRct</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>VIII. Family : Anabantidae</td>
<td><em>Channa gachua</em> (Hamilton)</td>
<td>NE</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>IX. Family : Gobiidae</td>
<td><em>Anabas testudineus</em> (Bloch)</td>
<td>VU</td>
<td>M</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td><em>Glossogobius giuris</em> (Hamilton)</td>
<td>LRnt</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>33</td>
<td>5. Order: Beloniformes</td>
<td>Xenentodon cancila (Hamilton)</td>
<td>LRnt</td>
<td>R</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Abbreviations: A: Abundant; C: Common; M: Moderate; R: Rare ; +: Present; -: Absent; VU-Vulnerable; EN-Endangered; LRnt-Lower Risk near threatened; LRlc-Lower Risk least concern; EX-Exotic; NE-Not Evaluated; Taxonomic Status as per Jayaram [33] and * Recently this species declared as state Fish of Madhya Pradesh.

**MATERIALS AND METHODS**

Gour River lies on Mandla Road (79°59’23.50°E and 21°08’54.30°N) about 10 km southeast of Jabalpur. Fishes were collected from Gour River near Gour Bridge, Near TFRI campus and near Saliwara Village. The area enjoys semi-arid type of climate with mean annual precipitation of 1358mm. Fish were collected in three seasons (pre monsoon from February to May, monsoon from June to September and post monsoon from October to January) for a period of one year from April 2010-March 2011. The fish were collected by hand-net, cast nets and from local fishermen and local markets. Collected fish samples were preserved in 4% formalin and identified following Talwar and Jhingran [32], Jayaram [33]. Some preserved fish specimens are deposited in the Central Zone Regional Centre, Zoological Survey of India, Jabalpur.

Visual observations were also carried out if the water was clear, to understand the distribution of fish species. The relative abundance of the fish was classified into four categories namely abundant (76-100% of total catch), common (51-75% of the total catch), moderate (26-50% of the total catch) and rare (1-25% of the total catch), assuming the fishing efforts constant for each catch. Threat status was determined as previously reported by Molur and Walker [3].
RESULTS AND DISCUSSION

During the study a total 33 species of primary freshwater fishes belonging to 5 orders, 10 families and 21 genera were recorded from the study sites. Number of species, their distribution in different study sites, Threat status and relative abundance is given in Table 1. Maximum number of species and individuals were recorded near Gour Bridge whereas low number and individuals were recorded near Saliwara Village. In the assemblage structure, cyprinid constituted the dominant group and the cyprinids *Labeo rohita*, *Catla catla*, *Osteobrama cotio*, *Puntius sophore*, *Puntius ticto*, *Rasbora daniconius* are represented in all study sites. The cyprinids *Labeo bata* and *Puntius chola* represents only single location. In all, 6 species represents only single site whereas 22 species are recorded in all study sites. The family Cyprinidae dominated with 16 species followed by Channidae with 4 species and Bagridae with 3 species, besides other families as Siluridae, Mastacembelidae, Claridae, Synbranchidae, Anabantidae, Gobiidae and Belonidae (Table 1). The Mahaseer, *Tor tor*, an endangered and highly prized sport fish is abundant and thriving well in all the three study sites and has been declared as state fish of Madhya Pradesh.

Out of the 33 species, two species *Tor tor* and *Ompok bimaculatus* are endangered, nine species vulnerable, fifteen species are lower risk near threatened, one species lower risk least concern, two species are exotic and four species are not evaluated categories (Molur and Walker [3]).

The study revealed that many species in the study area are being threatened by various human activities, invasive alien species and destructive fishing. Moreover, removal of sewage runoff into the river causes severe threats to fish diversity. Special attention is to be given for conservation of these fish diversity. The observations recorded in the present study may prove valuable as a reference for assessing the changes due to the environmental conditions in the locality, in future. The findings of the present study underline the importance of Gour River in providing preferred abode for fishes.

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REFERENCES


